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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/039,774	11/09/2001	Ting Wang	RID 01058 (03259-00018)	9156

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Martha Ann Finnegan, Esq.
Chief Intellectual Property Counsel
Cabot Corporation
157 Concord Road
Billerica, MA 01821-7001

EXAMINER	
JOHNSON, JERROLD D	
ART UNIT	PAPER NUMBER
3728	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/06/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/039,774	WANG ET AL.	
	Examiner	Art Unit	
	Jerrold Johnson	3728	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 October 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mabry 6,040,364 in view of Hale US 2,215,435 and Jorgensen, Jr. et al. US 4,207,218.

Mabry was the basis for the rejections of claims 1-8 in the previous Office Action dated 08 November 2005, and the Final Office Action dated 14 April 2006.

Mabry, assigned to the same assignee as the present application, was asserted by the Examiner to disclose the claimed process steps of producing the masterbatch as is set forth in the product-by-process claim 1, as well as the bale comprised of pieces of elastomer composite comprising an elastomer and filler that result from the process steps.

Applicant previously argued that Mabry does not disclose the process set forth in claim 1. However, no step in the process set forth in claim 1 has been identified as being absent in Mabry. Accordingly, this argument was found by the Examiner to be unsubstantiated and unpersuasive. The Applicant has not repeated the argument in the response dated 16 October 2006.

As was submitted by the Examiner in the Office Actions dated 08 November 2005, and the Final Office Action dated 14 April 2006, Mabry does not explicitly disclose

the void volume of the bale being at least 3%, as is set forth in claims 1 and 6. Nor does Mabry explicitly disclose: that the void volume is 3% to 40%, as is set forth in claim 2; that the elastomer pieces have a planar form, as is set forth in claim 3; that the elastomer composite pieces are in the form of short strips that are 40-60mm long, 5-10mm wide and 5-10 mm thick, as is set forth in claim 5; that the pieces are in the form of pellets having a diameter of 5-10mm and a length of 10-30mm, as is set forth in claims 6 and 7; or a Mooney viscosity at least 100, as is set forth in claim 8.

The response dated 08 March 2006 states: "Examiner asserts that the inventive concept of decreasing the density of a block so as to ease a subsequent comminuting step is well-known", and, "Examiner asserts that it is well-known to choose the size and shape of particles compressed into a bale or block so as to achieve a desired compaction with respect to void volume." The Applicant previously properly contested the Examiner's assertions made through Official Notice in the response dated 08 March 2006.

It was previously submitted in the Final Office Action dated 14 April 2006 that there is sufficient evidence to support the Examiner's Official Notice assertions. The Examiner in the following passages repeats the evidence in support of the factual assertions made through Examiner's Official Notice. It is noted that the Applicant has not contested these evidentiary findings.

Firstly, Hale US 2,215,435 sets forth in column 1, that in regard to rubber bales "if the milling operations could be reduced or made easier, the savings in labor, power consumption and depreciation on heavy mill equipment would be corresponding reduced." From this reference it can be seen that the problems associated with comminuting, pulverizing rubber bales have been known for at least 65 yrs.

Secondly, Jorgensen, Jr. et al. US 4,207,218 sets forth that friable rubber bales offer an excellent balance between the economics of shipping and storage and low energy consumption upon use. To this end, Jorgensen describes the steps of processing the rubber into solid particulate form of a size from about .1mm to 15mm (col. 2, line 6-10) through techniques such as grinding (col. 2, lines 15 and 16). Subsequent, to this process, the particles are compacted into bales where it was recognized that "when compaction reaches a point where the bale has over two times the bulk density of the original particulate rubber, the bale ceases to be friable (col. 6, lines 7-10). Jorgensen provides two examples in cols. 5 and 6 showing different particle sizes pressures and resulting bale densities. Clearly, Jorgensen recognizes what the Examiner has previously asserted, that being the relationship of bale density with ease of comminuting or pulverizing the bale, in addition to the relationship of particle size to the resulting bale density.

Although Jorgensen does not explicitly set forth void volume, and instead focuses on "density", it is recognized that as bale density increases as void volume decreases. Jorgensen focuses on bale density as opposed to void volume, but the two are intertwined (and as is recognized in the title of the present application "Elastomer composite materials in *low density* forms and methods"). It is also noted that the void volumes set forth in the claims are not established in the application as being critical. From the teachings of Jorgensen alone, one of ordinary skill in the art would recognize that bale density is a variable to be optimized. Accordingly, it would have been obvious to one of ordinary skill in the art through routine experimentation to discover the optimum or workable ranges of bale density (void volume) so as to achieve a bale that is suitable for pulverization or comminution with minimal machine wear and minimal energy input.

Additionally, it is noted that no criticality of particle size is established in the application. It is further noted that the particle sizes set forth in Jorgensen (such as 15mm) overlap the sizes set forth in the claims. From the teachings of Jorgensen alone, one of ordinary skill in the art would similarly recognize that in the pursuit of a proper bale density, particle size is also a variable to be optimized. Accordingly, it would have been obvious to one of ordinary skill in the art through routine experimentation to discover the optimum or workable ranges of particle

sizes so as to achieve a bale that is suitable for pulverization or comminution with minimal machine wear and minimal energy input.

Additionally, it is noted that no criticality of Mooney viscosity is established in the application. Mabry discloses in Table 10 Mooney viscosities of at least 100 as is claimed. Additionally, to the extent needed, Jorgensen discloses a Mooney viscosity of 80, which is slightly below that claimed in claim 8 (at least 100). However, here again, from the teachings of Jorgensen one of ordinary skill in the art would similarly recognize that in the pursuit of a proper bale density, Mooney viscosity is also a variable to be optimized. Accordingly, it would have been obvious to one of ordinary skill in the art through routine experimentation to discover the optimum or workable ranges of Mooney viscosity so as to achieve a bale that is suitable for pulverization or comminution with minimal machine wear and minimal energy input.

Finally, with respect to the shape of the bale particles set forth in the claims, the applicant has set forth three different shaped particles: planar, short strips, and pellets. On page 6 of the specification it is stated, "The elastomer composite pieces may be formed from other shapes as well." Accordingly, no criticality of the shape has been asserted, and instead the application explicitly sets forth that the shape of the particles is not critical as it relates to bale density. Accordingly, an assertion of

criticality of the claimed shapes would be in stark contrast to what is set forth in the specification.

In situations such as this, changes of configuration are generally considered to be a matter of choice which a person of ordinary skill in the art would have found obvious absent persuasive evidence that the particular configuration of the claimed shape is significant. See In re Dailey, as is set forth in the MPEP 2144.04 IV B.

In the Jorgensen reference, like the present application, the role of particle shape in bale density is not explicitly set forth as being significant. In particular, Jorgensen, like the present application, does not focus on a particular shape and instead mentions powder and crumb size, and that the rubber is processed into a particle form through various processes such as coagulation, spray drying and grinding (col. 2, lines 6-16). It could reasonably be stated that Jorgensen both implicitly and explicitly describes various particle shapes by his description of various particle producing processes that would necessarily result in different shaped particles. It is submitted that the particle shapes produced by the various processes set forth in Jorgensen would necessarily be consistent with the particle shapes claimed: planar, short strips and pellets. Jorgensen further implicitly sets forth that the different shaped particles produced in the various processes are all suitable to produce bales of the desired density so as to be easily comminuted or pulverized.

Although the Examiner has previously submitted that the role of particle shape in determining a final density of a compacted product is well known in many arts, such an assertion is not necessary to reject the present claims, nor is evidence necessary to support this assertion. The evidence gleaned from Jorgensen indicates that particle size, not shape is more important in achieving his objective of a low density bale that is easily comminuted or pulverized. And this evidence is completely consistent with the disclosure of the present application. Specifically, in both Jorgensen and the present application the relative insignificance of particle shape in comparison to particle size is implicitly set forth with respect to achieving proper bale density.

Thirdly, although not explicitly needed to satisfy the Examiner's assertions, Lopez Serrano Ramos et al. US 6,646,028 and Chung et al. US 6,372,822 both disclose the post processing of extruded rubber crumb into particles of a smaller size than leave the extruder. The post processing is performed through milling or granulating processes prior to the baling of the crumb. Chung further discloses that "a looser bale may be preferred for use in a Banbury mixer or the like."

Accordingly, the Examiner's assertions made through Official Notice have been supported through the previously discussed teachings of Jorgensen, Hale, Ramos and Chung.

With respect to the new claim limitation "wherein the elastomer composite pieces have a Mooney viscosity of at least 100", the Examiner asserts that this limitation is also taught by Jorgensen.

Jorgensen is clearly aware of the relationship between friability and bale density in bales comprised of particulate rubber, and how the friability of rubber bales relates to energy consumption during processing of the bales (e.g. comminuting) as well as how the density of the bales relates to the economics of shipping and storage of bales (e.g. the storage space needed for a give amount of rubber). See for instance col. 1, lines 35-38. Implicit in the disclosure is that there is a specific inverse relationship between friability and density in rubber bales. See col. 1, lines 5-15.

With this understanding of how density and friability relate to the shipping, storage and processing of rubber, Jorgensen provides a solution through which the friability of bales is preserved (thereby decreasing energy consumption during processing), while maximizing the density of the bales so as to decrease the costs associated with shipping and storage of the bales.

Jorgensen's specific inventive concept is the use of anti-cake agents in the formation of rubber bales so as to provide the necessary friability of bales to thus diminish production costs associated with energy consumption, while also providing bale densities that decrease the costs associated with shipping and storage of the bales. In other words, the teachings of Jorgensen are that anti-cake agents allow for densely packed bales to be produced, thus providing space-saving in shipping and storage, while still providing the necessary friability of the bales so as to diminish energy

consumption. See column 4, lines 28-37. In addition to the specific teachings of Jorgensen regarding using anti-cake agents to enhance density while preserving a friability suitable for processing, the Jorgensen reference, once again, implicitly suggests that bales formed without anti-cake agents, although being convenient and economical for shipping, are of such a high density so as to require a large energy consumption to process. See col. 1, lines 5-15. That is the problem solved by his invention.

Jorgensen also teaches that rubbers in a raw polymer form have a Mooney viscosity between 20 and 125. Although the reference does suggest that Mooney viscosity affects the relationship between friability and density of rubber bales, it is clear that the inverse relationship between friability and density of rubber bales remains regardless of the exact Mooney viscosity. In other words, regardless of the Mooney viscosity, as the density of a bale increases, the friability decreases.

After reading the Jorgensen reference one of ordinary skill in the art would recognize this relationship between density (and its converse void volume) and friability (and how it directly relates to energy consumption) in the formation of rubber bales of ***all*** Mooney viscosities. Furthermore, Jorgensen specifically states that there is a degree of compaction where the bale is no longer friable.

Jorgensen further states in column 6, lines 3-7, that compaction (and implicitly the density and void volume that result from degree of compaction) also effects the particle size distribution once processed. After reading the Jorgensen reference one of

ordinary skill in the art would recognize this relationship between density (and its converse void volume) and rubber particle size distribution once the bale is processed.

Accordingly, it would be obvious to one of ordinary skill in the art that there is a correlation between the degree of compaction of a bale (and correspondingly the density and void volume that result from degree of compaction) and both the friability of the bale and the particle size distribution of the bale once processed. And, with this understanding in place, one of ordinary skill in the art would be motivated to optimize the variable of the density of the bales of Mabry, and in doing so also optimize the void volume, so as to produce desired results in bale friability (and the corresponding energy consumption in the processing of the bales) and bale size (and the corresponding storage and shipping costs).

Once again, the teachings of Jorgensen are not limited to a particular Mooney viscosity, and have in fact been presented in relation to rubbers having a Mooney viscosity at both ends of the scale.

Accordingly, the new claim limitations do not define over Mabry in view of Jorgensen.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jerrold Johnson whose telephone number is 571-272-7141. The examiner can normally be reached on 9:30 to 6:00 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mickey Yu can be reached on 571-272-4562. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JDJ

Mickey Yu
Supervisory Patent Examiner
Group 3700